Methodology

Industry Employment Projections

Source data for Missouri, St. Louis MSA and Kansas City MSA industry employment projections are derived from the Current Employment Statistics (CES) survey data. This employment is compiled at the total industry, the major industry, the 2-digit Standard Industrial Classification (SIC), and the 3-digit SIC levels into time series that span the years from 1975 to 1998. For some SIC designations CES data are only available down to the aggregated 2-digit level. In these instances, data from the ES-202 Employment and Wages program are used to "break out" information at the 3-digit level. The statistical data are adjusted to minimize the effects of major SIC code changes in the course of the series.

Source data for the other regions' industry projections are derived from the ES-202 data. This employment is also compiled at the total industry, the major industry, the 2-digit SIC, and the 3-digit SIC levels into time series that span the years from 1976 to 1998. The statistical data are adjusted to minimize the effects of major SIC code changes in the course of the series.

Beginning at the all industry level, the employment time series are projected into the target year by using linear regression and shift-share models. For the linear regression models, the industry employment trend is related to varying combinations of population trends, employment trends, and personal income trends at the area, state and national levels. For the shift-share models, industry employment is proportioned according to varying combinations of area, state and national population and employment data.

The results of these models are reviewed and compared by Missouri Department of Economic Development labor market analysts. From this review, the "best" model is chosen and this value becomes the projected employment in the target year. In cases where the "best" model does not reflect reality, an adjustment is made by the analysts to bring this value in line with their knowledge of state employment trends.

This process is then repeated at major industry, 2-digit SIC, and 3-digit SIC levels. In this fashion, an increasingly detailed projection of the target year's employment is fashioned.

Occupational Employment Projections

The Missouri Occupational Employment Statistics (OES) program surveys a sample of non-farm wage and salary businesses to provide current estimates of occupational employment by industry. Data from the 1996 to 1998 survey period were used to develop staffing patterns for industries at the 3 digit SIC level.

These staffing patterns are applied to the appropriate industry employment and the result is a matrix containing the base year's occupational employment levels for each industry. (Nationwide patterns are substituted where statewide patterns are not usable. Statewide patterns are substituted where area patterns are not usable).

The U.S. Bureau of Labor Statistics (BLS) develops national change factors that estimate changes in staffing patterns brought about by new technology and changing business practices. By applying these change factors to the base year's staffing patterns, a projected year's staffing pattern is derived. These adjusted staffing patterns are applied to the projected industry employment and the projected year's occupational employment levels for each industry is added to the matrix.

Estimates for self-employed and unpaid family occupational employment are then calculated by multiplying the occupational

matrix employment by estimating factors also provided by BLS. This self-employed and unpaid family occupational employment is then scaled to a total self-employed and unpaid family employment estimate derived from the U.S. Department of Labor's Current Population Survey and added to the matrix.

Once the occupational employment levels are computed, job openings due to growth for each occupation are calculated and replacement rates provided by BLS are used to calculate net replacement job openings for each occupation.

General Assumptions

The state and area employment projections were derived from the 1998-2008 national employment projections produced by the U.S. Bureau of Labor Statistics. Refer to the November 1999 issue of the *Monthly Labor Review*, published by the U.S. Department of Labor, for detailed information on the national projections.

State Assumptions

(1) Missouri's population is expected to increase 0.7 per cent annually between 1998 and 2008, bringing statewide population to over 5.8 million by the year 2008. St. Louis and Kansas City, the major metropolitan areas in the state, will continue to provide economic opportunities for Missouri's growing population.

(2) Missouri's personal income is expected to grow at an annual rate of 1.3 per cent between 1998 and 2008, which is lower than the 2.0 per cent posted over the 1988 to 1998 period.

(3) The economic patterns of the early 1990's are expected to continue through the year 2008, with strong employment growth in the service-producing industries and limited growth in the goods-producing industries.

Area Assumptions

(1) The population of the St. Louis MSA is projected to increase 0.3 percent annually between 1998 and 2008. St. Louis County and St. Louis City will continue to be major population and economic centers within the MSA. However, their relative size and significance are expected to decline. The fastest population growth is expected for St. Charles County.

(2) The population of the Kansas City MSA is projected to increase 0.7 percent annually between 1998 and 2008. The city of Kansas City, Missouri and Johnson County, Kansas are expected to continue as the major population and economic centers of the MSA.

(3) The population of the Northwest Region is expected to increase 0.2 percent annually between 1998 and 2008. The St. Joseph Metropolitan Statistical Area (MSA) is expected to continue as the major population and economic center of the region. Chillicothe, Maryville, Trenton and Brookfield are expected to continue as regional population and economic centers.

(4) The population of the Northeast Region is expected to increase 0.5 percent annually between 1998 and 2008. Hannibal, Kirksville, Moberly, Warrenton, and Troy will continue as the major population and economic centers for the region. Economic growth in the St. Louis Metropolitan Statistical Area (MSA) will continue to expand into Lincoln and Warren Counties.

(5) The population of the West Central Region is expected to increase 0.6 percent annually between 1998 and 2008. Sedalia is expected to continue as the major industrial center for the region. Warrensburg,

Marshall, Nevada, Clinton, and Lexington are expected to continue as the major population and economic centers for the region.

(6) The population of the Central Region is expected to increase 1.0 percent annually between 1998 and 2008. The Columbia Metropolitan Statistical Area (MSA), Jefferson City, Rolla, Fort Leonard Wood, and the Lake of the Ozarks area are expected to continue as the major population and economic centers for the region.

(7) The population of the Southwest Region is expected to increase 1.1 percent annually between 1998 and 2008. The Joplin Metropolitan Statistical Area (MSA) will continue as the major population and economic center for the region.

(8) The population of the Ozark Region is expected to increase 1.7 percent annually between 1998 and 2008. The Springfield Metropolitan Statistical Area (MSA) and the Branson area are expected to continue as the major population and economic centers for the region.

(9) The population of the South Central Region is expected to increase 1.0 percent annually between 1998 and 2008. Poplar Bluff and West Plains are expected to continue as the major population and economic centers for the region.

(10) The population of the Southeast Region is expected to increase 0.4 percent annually between 1998 and 2008. Cape Girardeau, Sikeston, Farmington, Park Hills, and Kennett are expected to continue as the major population and economic centers of the region.

Suppression

State law requires government agencies to suppress employment data that would tend to reveal the operations of an individual or business. At the statewide level, published industry employment statistics are limited to major industry groups plus 2-digit Standard Industrial (SIC) industries with no suppress problems and 3-digit SICs with no suppression problems when estimated employment is equal to or greater than 100 in 1998. Published occupational employment is limited to major occupational groups and occupations with no suppression problems when estimated employment is equal to or greater than 20 in 1998.